IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.(Currently Amended) A coherent-scatter computed tomography apparatus for examination of an object of interest, the coherent-scatter computed tomography apparatus comprising:

a source of radiation; and

a single radiation detector array;

wherein the source of radiation is adapted to generate a fan-shaped radiation beam; wherein the single radiation detector array is asymmetrically arranged with respect to the fan-shaped radiation beam; wherein a first part of the single radiation detector array is used for a cone beam data acquisition and a second part of the single radiation detector array is used for scatter radiation measurements;

wherein the source of radiation and the single radiation detector array are rotatable around a rotational axis extending

through an examination area for receiving the object of interest;

wherein the source of radiation is arranged opposite to the single radiation detector array during scanning;

wherein the source of radiation generates a fan-shaped x-ray beam adapted to penetrate the object of interest in the examination area in a slice plane;

wherein the single radiation detector array includes a plurality of detector lines each with a plurality of detector elements arranged in a line;

wherein the plurality of detector lines are arranged parallel to the slice plane;

wherein a primary radiation attenuated by the object of interest impinges directly on a first line of the plurality of detector lines;

wherein the first line is not a second line of the plurality of detector lines;

wherein the second line is extending close to the geometrical center of the single radiation detector array; and

wherein the first line is the last line of the single radiation detector array in ~~the~~ a direction along which the object

of interest is displaced with respect to the single radiation detector array.

2.(Currently Amended) The coherent-scatter computed tomography apparatus of claim 1, wherein the single radiation detector array is arranged such that the slice plane intersects the single radiation detector array at a side thereof.

3.(Currently Amended) The coherent-scatter computed tomography apparatus of claim 2, wherein the object of interest is displaced with respect to the slice plane along a scanning direction which intersects the slice plane at an angle;

wherein a location where the slice plane intersects the single radiation detector array is offset with respect to a geometrical center of the single radiation detector array; and

wherein the location is offset from the geometrical center in the scanning direction.

4.(Currently Amended) The coherent-scatter computed tomography apparatus of claim 1,

wherein the single radiation detector array comprises a plurality of detector lines; and

wherein the fan-shaped radiation beam has a width of at least two detector lines of the plurality of detector lines when the radiation beam impinges onto the single radiation detector array after transmission through the object of interest.

5.(Currently Amended) The coherent-scatter computed tomography apparatus of claim 4, wherein only one first part of the single radiation detector array is used for a cone beam data acquisition and only one second part of the single radiation detector array is used for scatter radiation measurements.

Claim 6 (Canceled)

7.(Currently Amended) The coherent-scatter computed tomography apparatus according to claim 1, wherein the first line is arranged at a distance from the geometric center of the single radiation detector array in ~~a~~ the direction along which the object of interest is displaced with respect to the single radiation

detector array during scanning.

8.(Currently Amended) The coherent-scatter computed tomography apparatus of claim 1,

wherein a third line of the plurality of detector lines measures a scatter radiation scattered from the object of interest; and

wherein the third detector line is offset from the first detector line in ~~a~~ the direction along which the object of interest is displaced with respect to the single radiation detector array during scanning.

Claim 9 (Canceled)

10.(Currently Amended) A method of examining an object of interest, the method comprising the acts of:

energizing a source of radiation such that it generates a fan-shaped radiation beam; and

measuring ~~a~~ the primary radiation attenuated by the object of interest and ~~a~~ the scatter radiation scattered by the object of

interest by ~~means of a~~ the single radiation detector array which is asymmetrically arranged with respect to the fan-shaped radiation beam, wherein a first part of the single radiation detector array is used for a cone beam data acquisition and a second part of the single radiation detector array is used for scatter radiation measurement;

wherein the source of radiation and the single radiation detector array are rotatable around a rotational axis extending through an examination area for receiving the object of interest;

wherein the source of radiation is arranged opposite to the single radiation detector array during scanning;

wherein the source of radiation generates a fan-shaped x-ray beam adapted to penetrate the object of interest in the examination area in a slice plane;

wherein the single radiation detector array includes a plurality of detector lines each with a plurality of detector elements arranged in a line;

wherein the plurality of detector lines are arranged parallel to the slice plane;

wherein a primary radiation attenuated by the object of

interest impinges on a first line of the plurality of detector lines;

wherein the first line is not a second line of the plurality of detector lines;

wherein the second line is extending close to the geometrical center of the single radiation detector array; and

wherein the first line is the last line of the single radiation detector array in ~~the~~ a direction along which the object of interest is displaced with respect to the single radiation detector array.

Claim 11 (Canceled)

12. (Currently Amended) The method of claim 10,

wherein the fan shaped radiation beam has a width of at least two detector lines of the plurality of detector lines when the radiation beam impinges onto the single radiation detector array after transmission through the object of interest such that the first part of the single radiation detector array is used for a cone beam data acquisition and the second part of the single

radiation detector array is used for scatter radiation measurements.

13. (Currently Amended) A computer-readable medium tangible embodying a program of instructions executable for operating a coherent-scatter computed tomography apparatus, wherein, when the instructions are executed on a processor of the coherent-scatter computed tomography apparatus, the computer-readable medium causes the coherent-scatter computed tomography apparatus to perform the following operations:

energizing a source of radiation such that it generates a fan-shaped radiation beam; and

measuring a primary radiation attenuated by the object of interest and a scatter radiation scattered by an object of interest by means of a single radiation detector array which is asymmetrically arranged with respect to the fan-shaped radiation beam, wherein a first part of the single radiation detector array is used for a cone beam data acquisition and a second part of the single radiation detector array is used for scatter radiation measurements;

wherein the source of radiation and the single radiation detector array are rotatable around a rotational axis extending through an examination area for receiving the object of interest;

wherein the source of radiation is arranged opposite to the single radiation detector array during scanning;

wherein the source of radiation generates a fan-shaped x-ray beam adapted to penetrate the object of interest in the examination area in a slice plane;

wherein the single radiation detector array includes a plurality of detector lines each with a plurality of detector elements arranged in a line;

wherein the plurality of detector lines are arranged parallel to the slice plane;

wherein a primary radiation attenuated by the object of interest impinges on a first line of the plurality of detector lines;

wherein the first line is not a second line of the plurality of detector lines;

wherein the second line is extending close to the geometrical center of the single radiation detector array; and

wherein the first line is the last line of the single radiation detector array in ~~the~~ a direction along which the object of interest is displaced with respect to the single radiation detector array.